



(12) **United States Patent
Schoolcraft**

(10) **Patent No.: US 9,909,649 B2**
(45) **Date of Patent: Mar. 6, 2018**

(54) **MULTI-SPEED TRANSMISSION**

(56) **References Cited**

(71) Applicant: **ALLISON TRANSMISSION, INC.,**
Indianapolis, IN (US)

U.S. PATENT DOCUMENTS

(72) Inventor: **Brian Schoolcraft**, Crawfordsville, IN
(US)

6,176,803	B1	1/2001	Meyer et al.
6,910,985	B2	6/2005	Ishimaru et al.
6,955,627	B2	10/2005	Thomas et al.
6,984,187	B2	1/2006	Biermann
7,101,305	B2	9/2006	Tabata et al.
7,226,381	B2	6/2007	Klemen
7,429,230	B2	9/2008	Ziemer
7,549,942	B2	6/2009	Gumpoltsberger
7,566,283	B2	7/2009	Gumpoltsberger
7,575,533	B2	8/2009	Gumpoltsberger

(Continued)

(73) Assignee: **Allison Transmission, Inc.,**
Indianapolis, IN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/003,089**

OTHER PUBLICATIONS

(22) Filed: **Jan. 21, 2016**

International Search Report and Written Opinion, issued by Korean Intellectual Property Office dated May 7, 2015, 10 pages.

(65) **Prior Publication Data**

US 2016/0138680 A1 May 19, 2016

Related U.S. Application Data

(62) Division of application No. 14/453,660, filed on Aug. 7, 2014, now abandoned.

Primary Examiner — Jacob S Scott

Assistant Examiner — Tinh Dang

(74) *Attorney, Agent, or Firm* — Taft Stettinius & Hollister LLP; Stephen F. Rost

(51) **Int. Cl.**

F16H 3/66 (2006.01)

F16H 3/64 (2006.01)

F16H 3/62 (2006.01)

(52) **U.S. Cl.**

CPC **F16H 3/66** (2013.01); **F16H 3/64** (2013.01); **F16H 3/666** (2013.01); **F16H 2200/0065** (2013.01); **F16H 2200/2012** (2013.01); **F16H 2200/2046** (2013.01)

(58) **Field of Classification Search**

CPC F16H 2200/0065; F16H 2200/2012; F16H 2200/2046; F16H 3/64; F16H 3/66; F16H 3/666; F16H 3/62

See application file for complete search history.

(57) **ABSTRACT**

The present disclosure provides a multiple speed transmission having an input member, an output member, a plurality of planetary gearsets, a plurality of interconnecting members and a plurality of torque-transmitting mechanisms. The plurality of planetary gear sets includes first, second and third members. The input member is continuously interconnected with at least one member of one of the plurality of planetary gear sets, and the output member is continuously interconnected with another member of one of the plurality of planetary gear sets. At least nine forward speeds and one reverse speed are achieved by the selective engagement of the plurality of torque-transmitting mechanisms.

20 Claims, 6 Drawing Sheets

